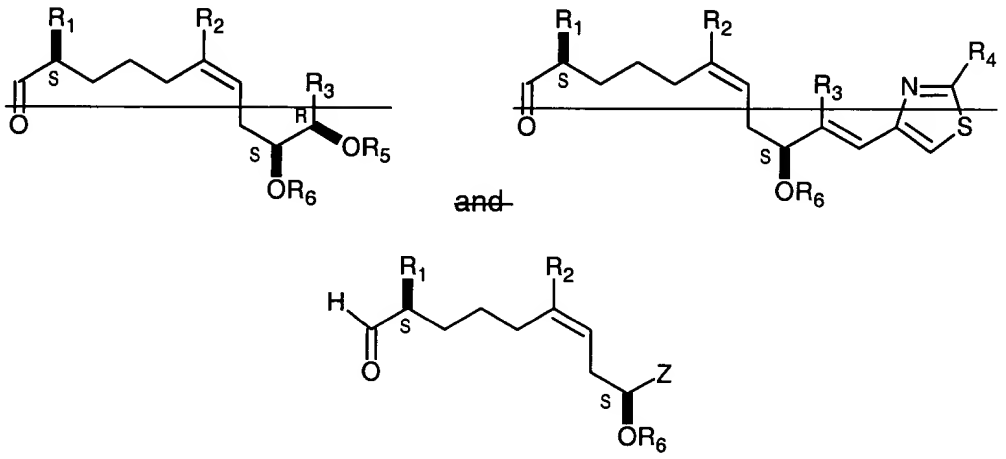
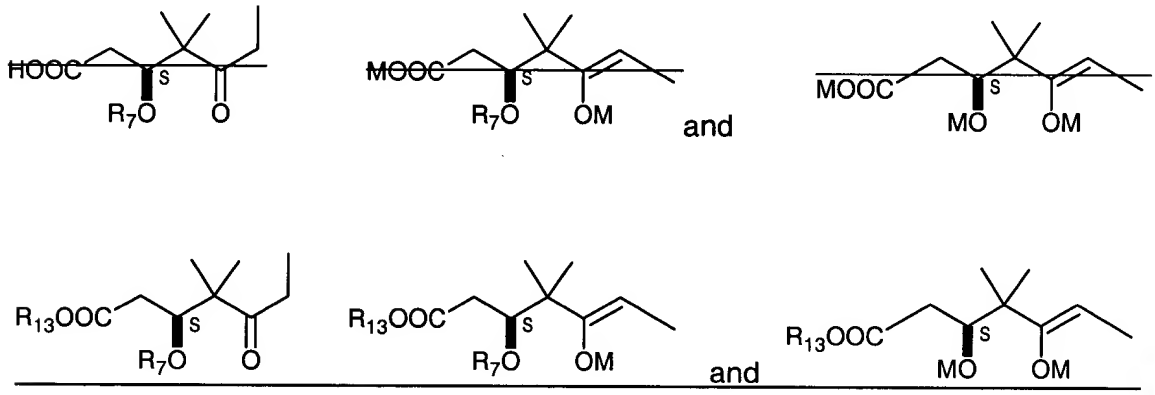
In the claims:

1. (Currently Amended) A method for use in producing epothilones and analogs and derivatives thereof, comprising:

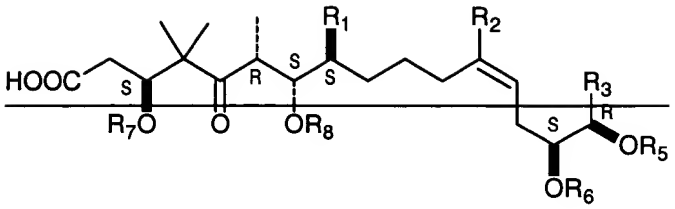
(a) performing an aldol condensation of a first compound selected from the formulas:



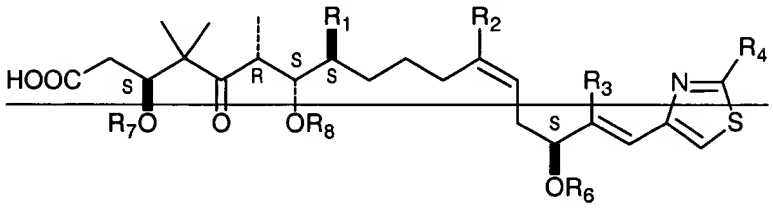
and stereoisomers thereof, with a second compound selected from the formulas:

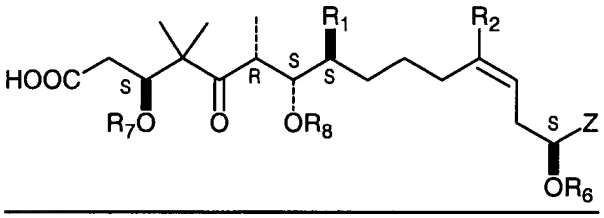


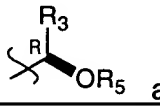
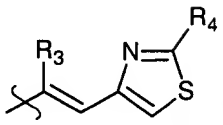
and stereoisomers thereof, thereby to form a third compound selected from the formulas:



~~and~~

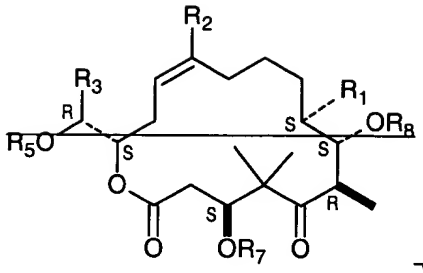
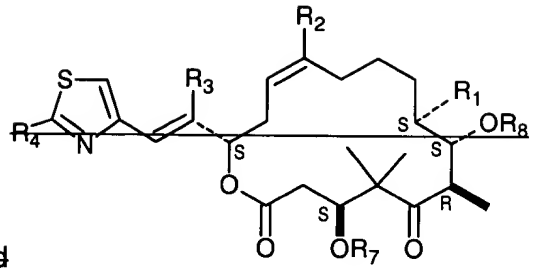




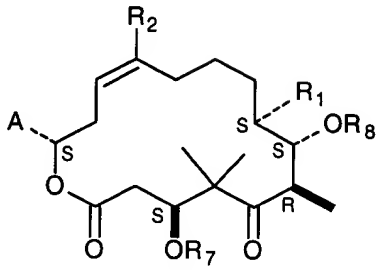
and stereoisomers thereof, wherein Z is selected from  and  ;

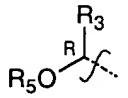
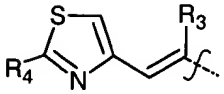
wherein R_1, R_2, R_3 and R_4 are each selected from H, alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein R_5, R_6, R_7 and R_8 are each selected from H and a protecting group; wherein R_{13} is H or a metal salt; and wherein M is an alkali metal salt or transition metal salt; and

(b) performing a macrolactonization of the third compound thereby to form a fourth compound selected from the formulas:

~~and~~



and stereoisomers thereof, wherein A is selected from  and  ; wherein R_1, R_2, R_3 and R_4 are each selected from H, alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; and wherein R_5, R_7 and R_8 are each selected from H and a protecting group.

2. (Original) A method according to claim 1 wherein R_1, R_3 and R_4 are each methyl, and R_2 is H or methyl.

3. (Original) A method according to claim 2 wherein R_2 is H.

4. (Original) A method according to claim 2 wherein R_2 is methyl.

5. (Original) A method according to claim 2 wherein at least one of R_5 - R_8 is TBS.

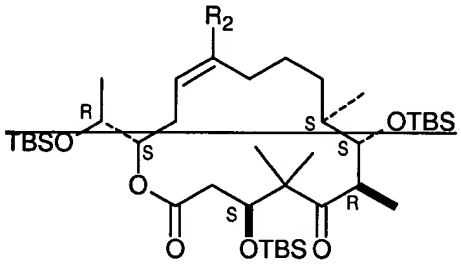
6. (Original) A method according to claim 2 wherein R_6, R_7 and R_8 are each TBS.

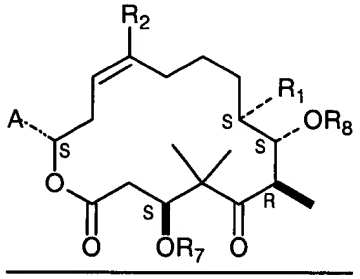
7. (Original) A method according to claim 2 wherein R_5 is PMB.

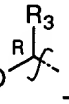
8. (Original) A method according to claim 2 wherein R_6 is SEM.

9. (Original) A method according to claim 1 wherein R_5 is selected from PMB, DPS and TBS; wherein R_6 is selected from H, TBS, TMS, TIPS, PMBM and SEM; wherein R_7 is selected from H, TBS, TROC, $-CO(CH_2)_4CH_3$ and $-CO(CH_2)_3CH=CH_2$; and wherein R_8 is selected from H and TBS.

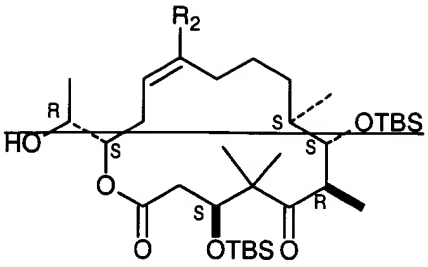
10. (Currently Amended) A method according to claim 1 wherein said fourth compound is of a formula selected from:

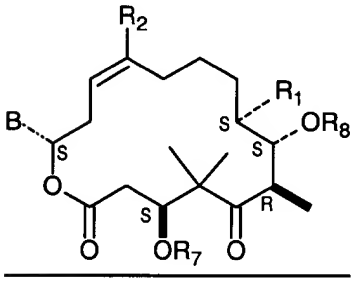


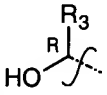


and stereoisomers thereof, wherein A is 

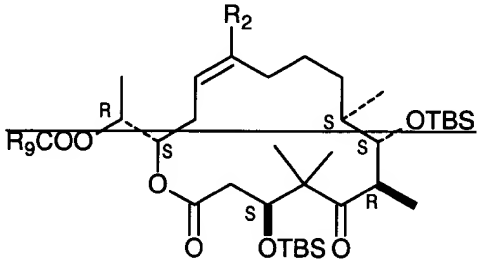
; ~~where~~ R_2 is H or methyl; R_7 and R_8 are each selected from TBS, H, and a protecting group; and wherein said fourth compound is converted to a fifth compound of a formula selected from:

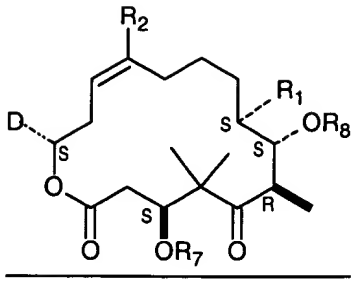


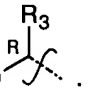


and stereoisomers thereof, wherein B is  ; ~~where~~ R_2 is H or methyl; and R_7 and R_8 are each selected from TBS, H, and a protecting group.

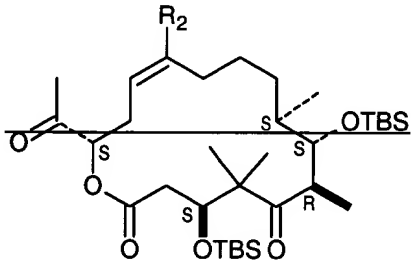
11. (Currently Amended) A method according to claim 10 wherein said fifth compound is converted to a sixth compound of a formula selected from:

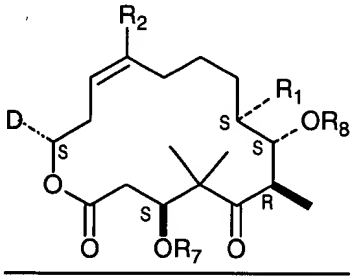




and stereoisomers thereof, wherein D is  ; ~~where~~ R_2 is H or methyl; R_7 and R_8 are each selected from TBS, H, and a protecting group, and wherein R_9 is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof.

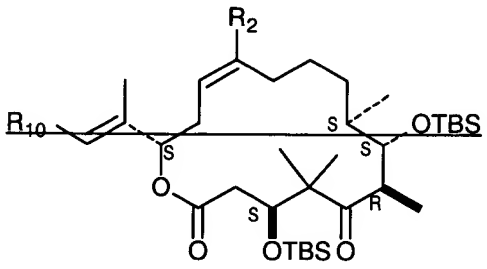
12. (Currently Amended) A method according to claim 10 wherein said fifth compound is converted to a sixth compound of a formula selected from:

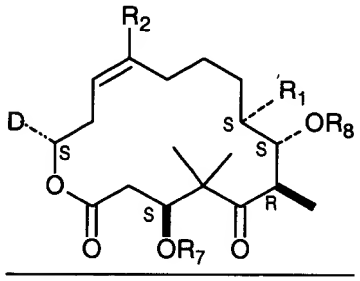


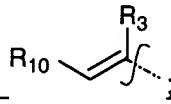


and stereoisomers thereof, wherein D is  ; ~~where~~ R_2 is H or methyl; and R_7 and R_8 are each selected from TBS, H, and a protecting group.

13. (Currently Amended) A method according to claim 12 wherein said fifth compound is converted to a sixth compound of a formula selected from:

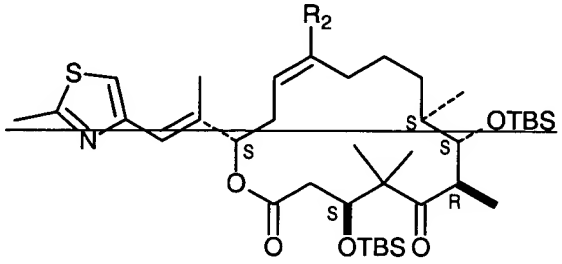


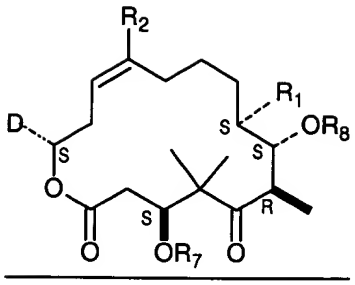


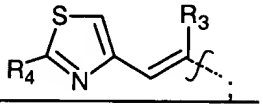
and stereoisomers thereof, wherein D is 

; ~~where~~ R_2 is H or methyl; R_7 and R_8 are each selected from TBS, H, and a protecting group; and wherein R_{10} is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof.

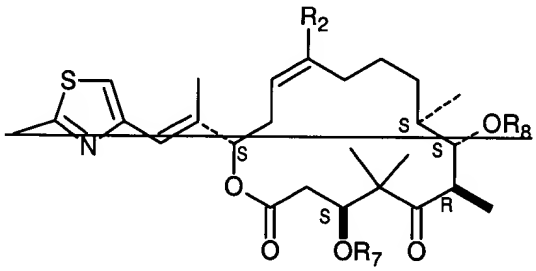
14. (Currently Amended) A method according to claim 13 wherein said sixth compound is of a formula selected from:

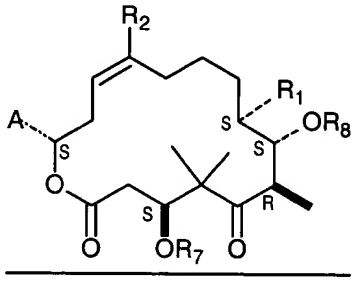


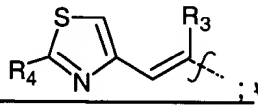


and stereoisomers thereof, wherein D is  ; ~~where~~ R_2 is H or methyl; and R_7 and R_8 are each selected from TBS, H, and a protecting group.

15. (Currently Amended) A method according to claim 1 wherein said fourth compound is of a formula selected from:



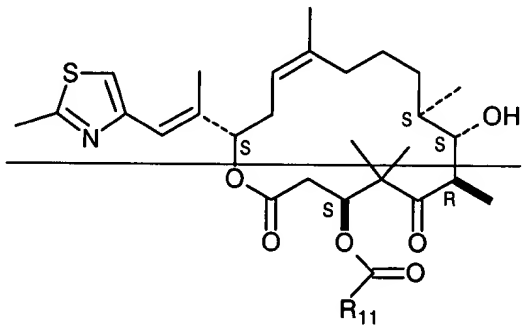


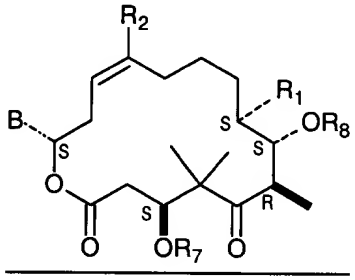
and stereoisomers thereof, wherein A is  ; ~~where~~ R_2 is H or methyl; R_7 is H or TBS; and R_8 is H, TBS, or TROC.

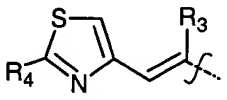
16. (Original) A method according to claim 15 wherein said fourth compound is further converted to Epothilone B.

17. (Original) A method according to claim 15 wherein R_7 and R_8 each are H.

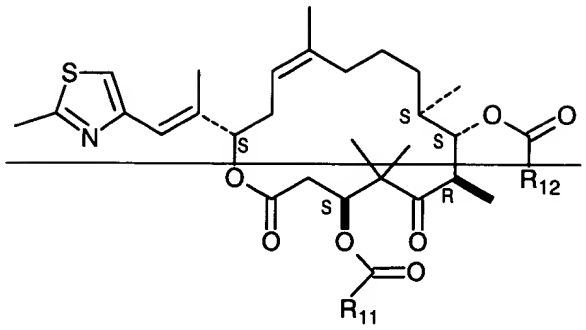
18. (Currently Amended) A method according to claim 17 wherein said fourth compound is further converted to a fifth compound of a formula selected from:

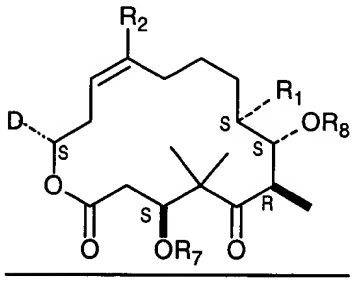


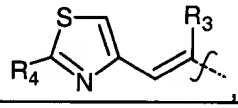


and stereoisomers thereof, wherein B is  ; R_7 is  ; R_8 is H; and R_{11} is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

19. (Currently Amended) A method according to claim 18 wherein said fifth compound is further converted to a sixth compound of a formula selected from:

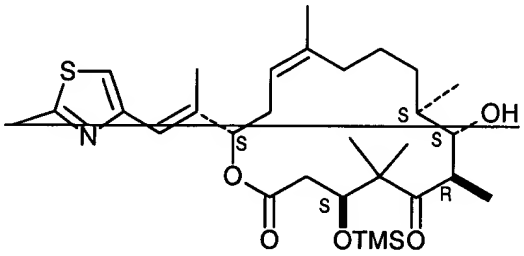


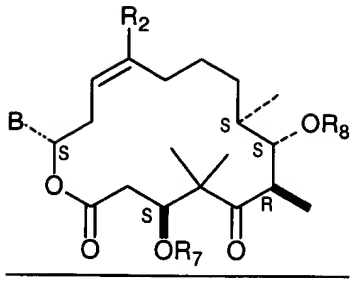


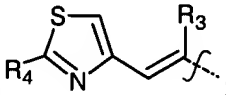
and stereoisomers thereof, wherein D is  , R_7 is  ,

R_8 is R_{12}, and R_{11} and R_{12} are each selected from alkyl, alkenyl, alkynyl, aryl, alkylaryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

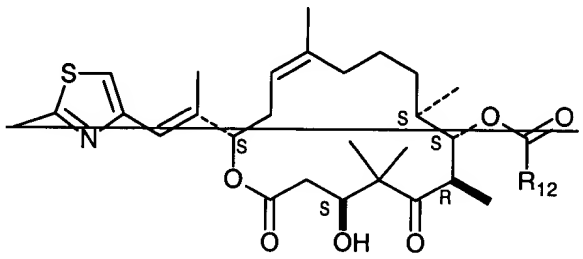
20. (Currently Amended) A method according to claim 17 wherein said fourth compound is further converted to a fifth compound of a formula selected from:

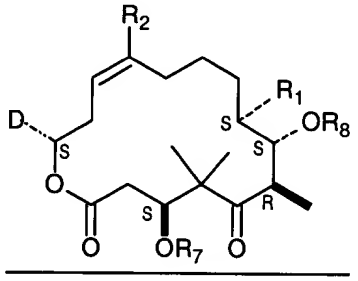


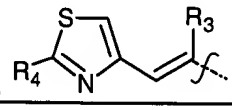
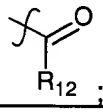


and stereoisomers thereof wherein B is  ; R_7 is TMS; and R_8 is H.

21. (Currently Amended) A method according to claim 20 wherein said fifth compound is further converted to a sixth compound of a formula selected from:

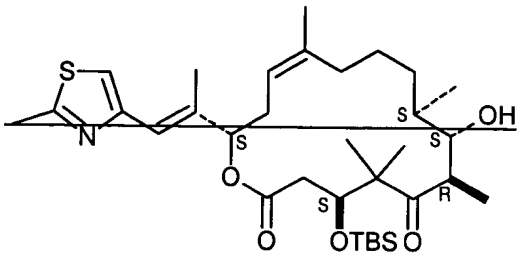


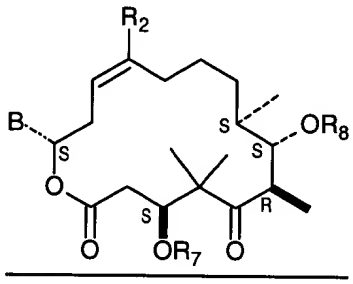


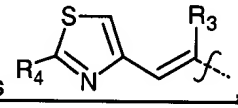
and stereoisomers thereof, wherein D is  ; R_7 is H; R_8 is  ; and R_{12} is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

22. (Original) A method according to claim 15 wherein R_7 is TBS and R_8 is TROC.

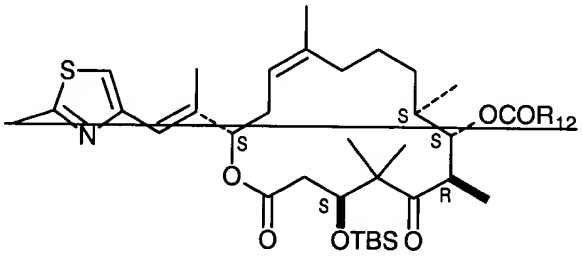
23. (Currently Amended) A method according to claim 22 wherein said fourth compound is further converted to a fifth compound of a formula selected from:

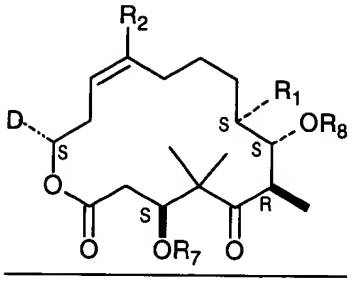


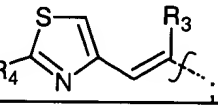


and stereoisomers thereof wherein B is  , R_7 is TBS and R_8 is H.

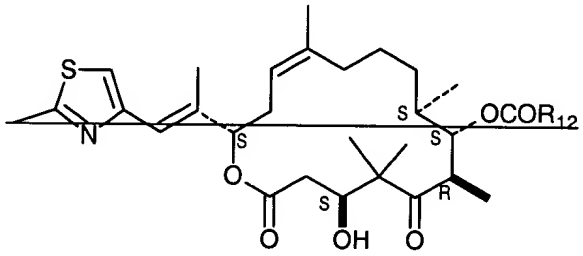
24. (Currently Amended) A method according to claim 23 wherein said fifth compound is further converted to a sixth compound of a formula selected from:

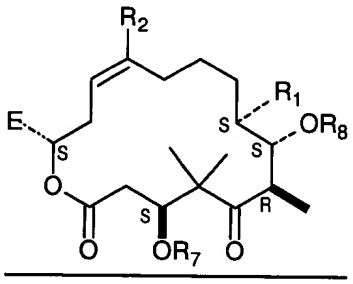


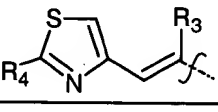


and stereoisomers thereof, wherein D is  ; R_7 is TBS; R_8 is COR_{12}; and R_{12} is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

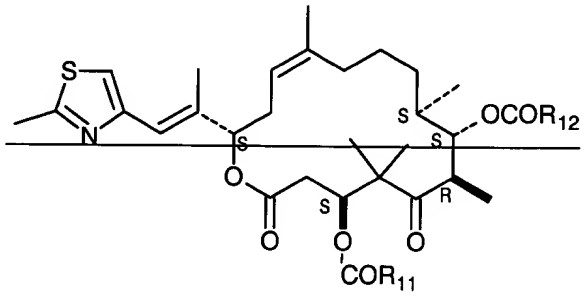
25. (Currently Amended) A method according to claim 24 wherein said sixth compound is further converted to a seventh compound of a formula selected from:

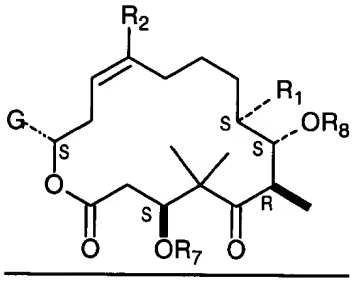


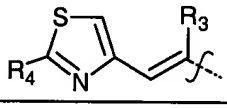


and stereoisomers thereof, wherein E is  ; R_7 is H; R_8 is COR_{12}; and R_{12} is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

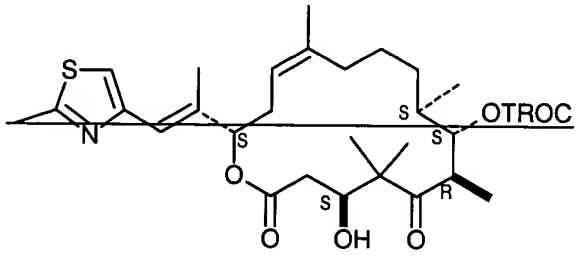
26. (Currently Amended) A method according to claim 25 wherein said seventh compound is further converted to an eighth compound of a formula selected from:

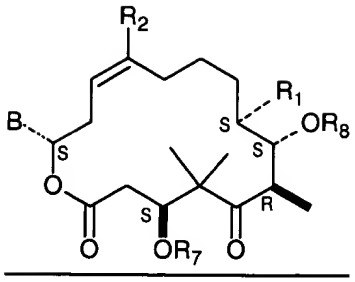


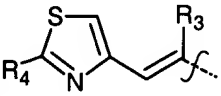


and stereoisomers thereof, wherein G is  ; R_7 is COR_{11}; R_8 is COR_{12}; and R_{11} and R_{12} are each selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

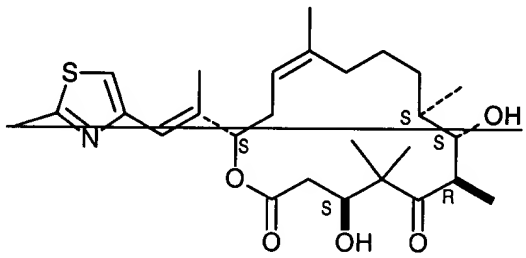
27. (Currently Amended) A method according to claim 22 wherein said fourth compound is further converted to a fifth compound of a formula selected from:

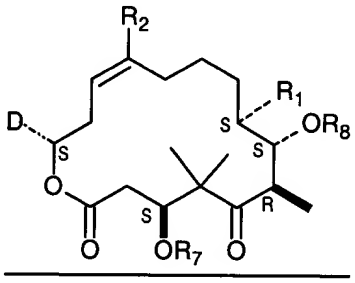


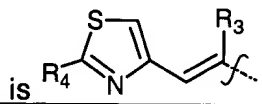


and stereoisomers thereof wherein B is  ; R_7 is H; and R_8 is TROC.

28. (Currently Amended) A method according to claim 27 wherein said fifth compound is further converted to a sixth compound of a formula selected from:

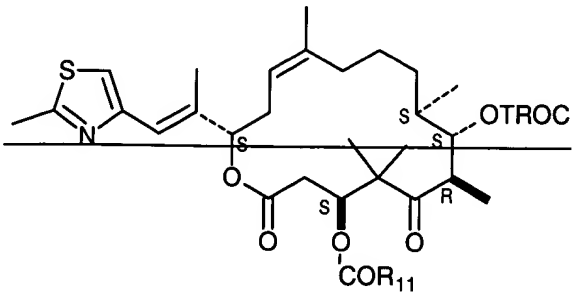


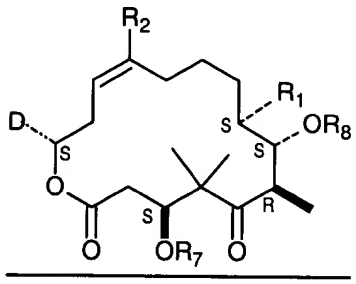


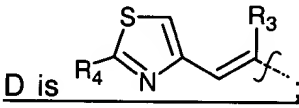
and stereoisomers thereof wherein D is  and R_7 and R_8 are each H.

29. (Original) A method according to claim 28 wherein said sixth compound is further converted to Epothilone B.

30. (Currently Amended) A method according to claim 27 wherein said fifth compound is further converted to a sixth compound of a formula selected from:

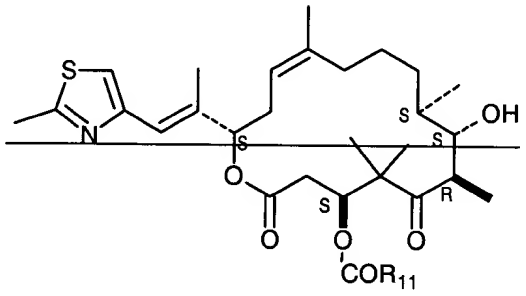


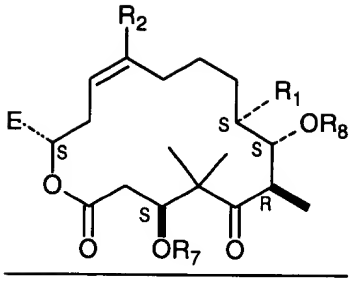


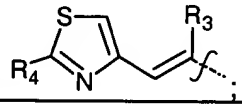
and stereoisomers thereof, wherein D is 

; R_7 is COR_{11}; R_8 is TROC; and R_{11} is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

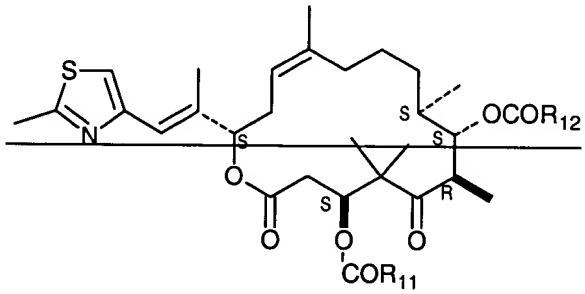
31. (Currently Amended) A method according to claim 30 wherein said sixth compound is further converted to a seventh compound of a formula selected from:

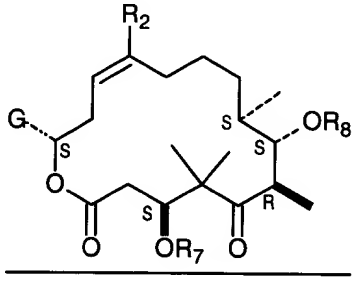


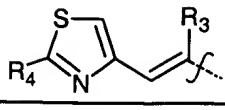


and stereoisomers thereof, wherein E is  ; R_7 is COR_{11}; R_8 is H; and R_{11} is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

32. (Currently Amended) A method according to claim 31 wherein said seventh compound is further converted to an eighth compound of a formula selected from:

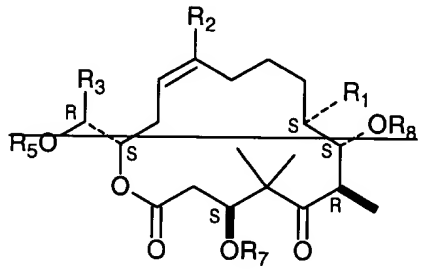


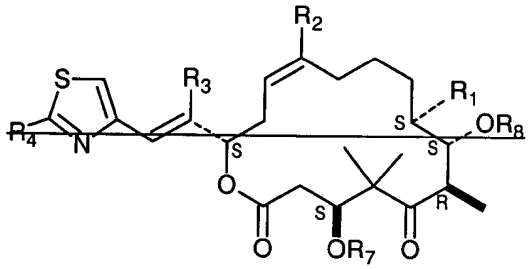


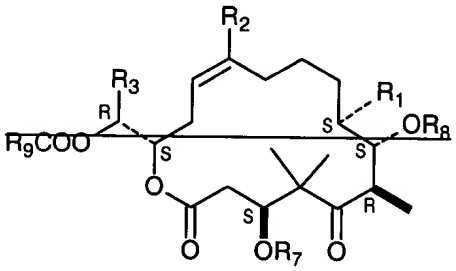
and stereoisomers thereof, wherein G is  ; R_7 is COR_{11}; R_8 is COR_{12}; and R_{11} and R_{12} are each selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

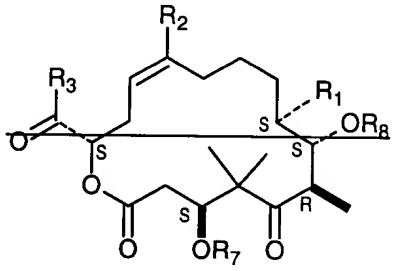
33. (Original) A chemical compound formed according to the method of claim 1.

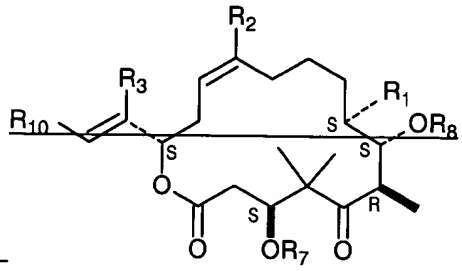
34. (Currently Amended) A chemical compound according to claim 33 wherein said compound is selected from the formulas:



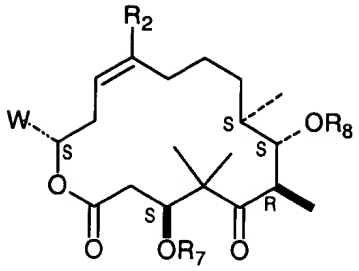




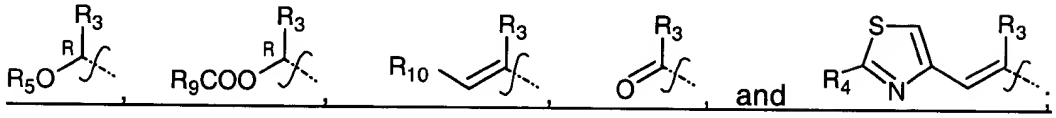




~~and~~



and stereoisomers thereof, wherein W is selected from



wherein R_1, R_2, R_3 and R_4 are each selected from H, alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein R_5 and R_6 are each selected from H and a protecting group; wherein R_7 is selected from H, a protecting group and COR_{11}; wherein R_8 is selected from H, a protecting group and COR_{12}; wherein R_9 is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein R_{10} is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; and wherein R_{11} and R_{12} are each selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

35. Cancelled.

36. Cancelled.

37. Cancelled.

38. Cancelled.

39. Cancelled.

40. Cancelled.

41. Cancelled.

42. Cancelled.

43. Cancelled.

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46. Cancelled.

47. Cancelled.

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49. Cancelled.

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58. Cancelled.

59. Cancelled.

60. Cancelled.

61. Cancelled.

62. Cancelled.

63. Cancelled.

64. Cancelled.

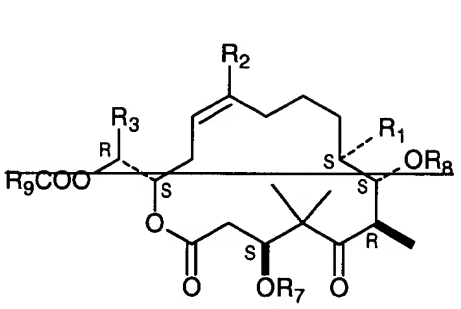
65. Cancelled.

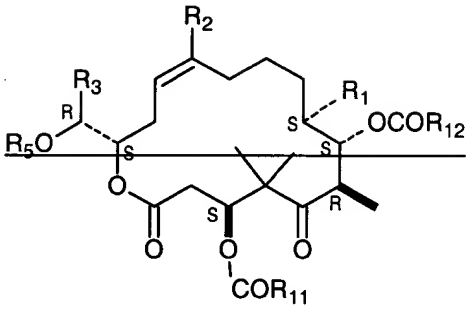
66. Cancelled.

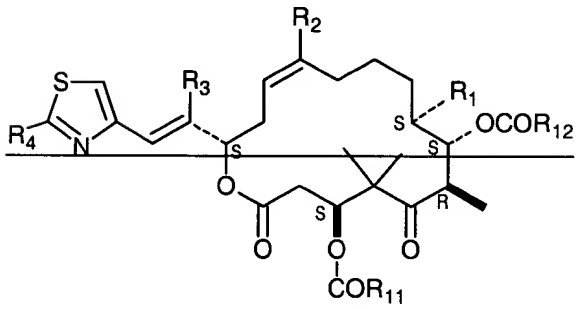
67. Cancelled.

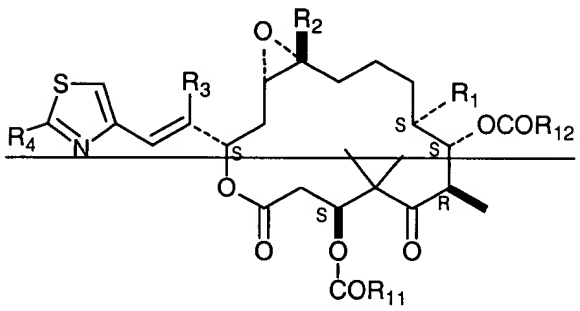
68. Cancelled.

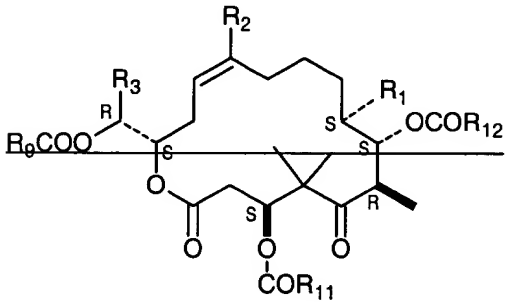
69. (Currently Amended) A chemical compound having a formula selected from:

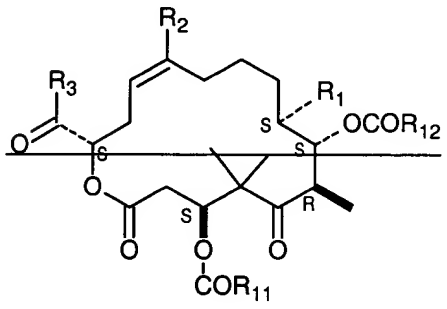


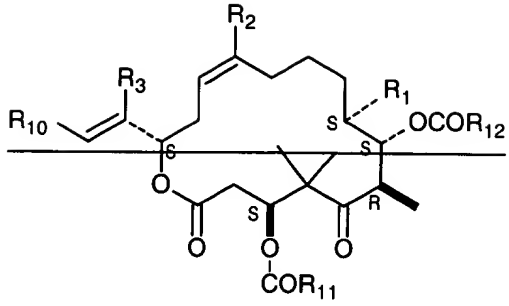


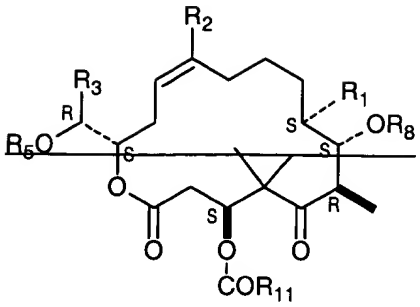


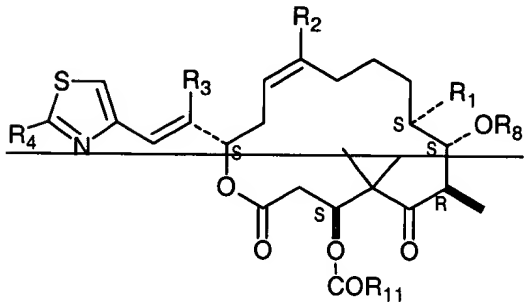


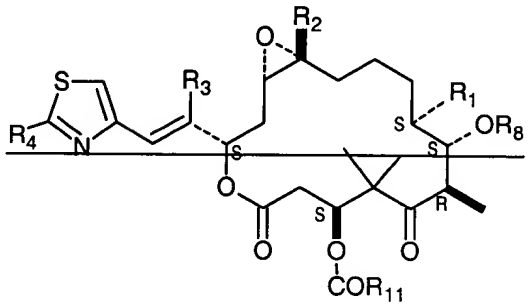


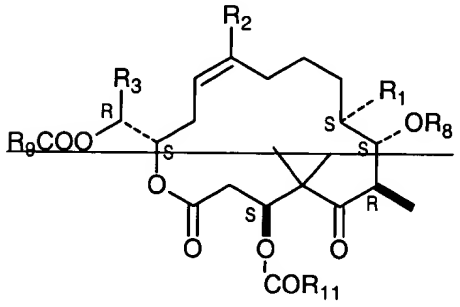


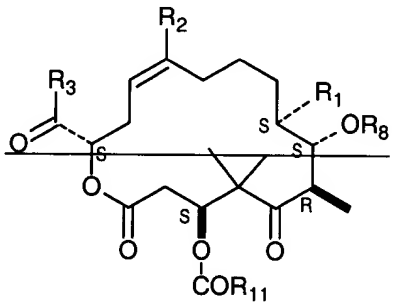


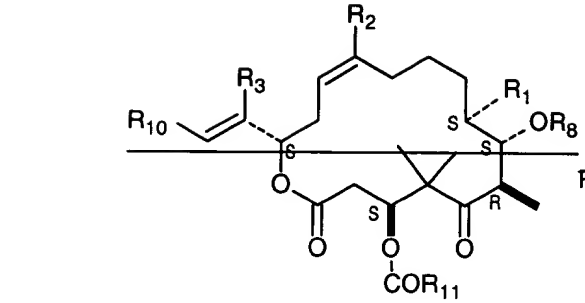


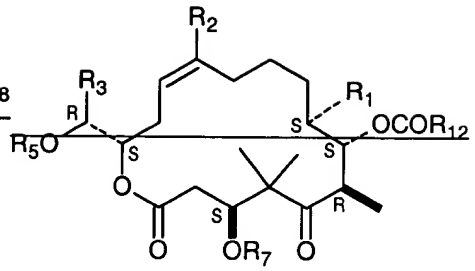


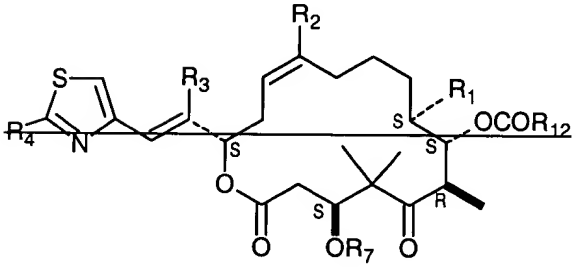


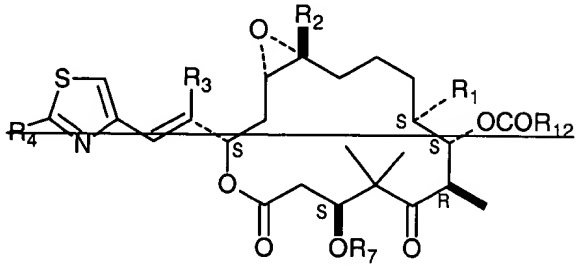


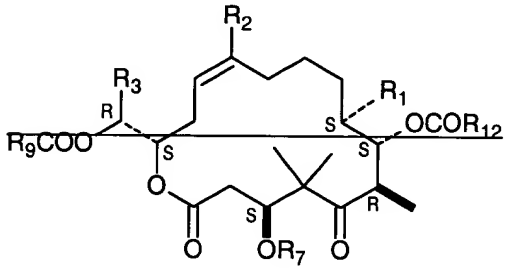


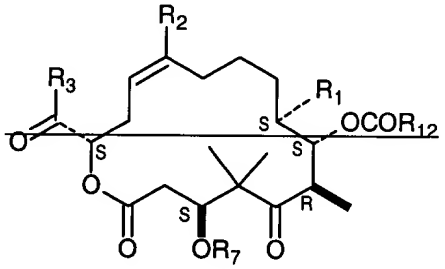


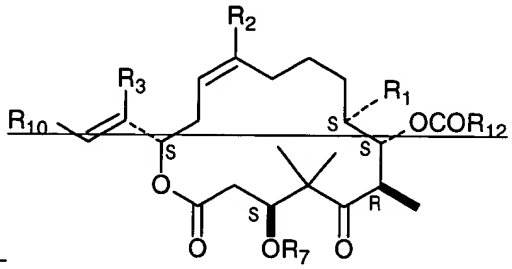




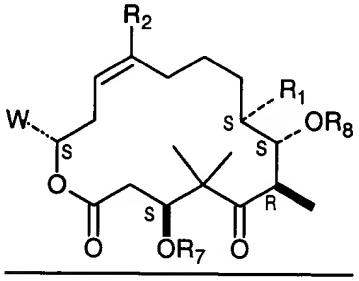








and



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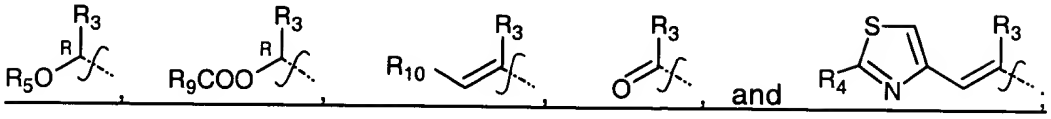
and stereoisomers thereof, wherein W is selected from



wherein R_1, R_2, R_3 and R_4 are each selected from H, alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein R_5, R_6, R_7 and R_8 are each selected from H and a protecting group; wherein R_9 is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein R_{10} is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; and wherein R_{11} and R_{12} are each selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

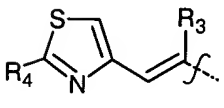
70. (Original) A chemical compound according to claim 69 wherein at least one of R_{11} and R_{12} is selected from $-(CH_2)_xCH_3$ and $-(CH_2)_yCH=CH_2$, where x and y are integers.

71. (Currently Amended) A chemical compound according to claim ~~69~~ 70 wherein x and y are selected from the integers 3 and 4.

72. (Original) A chemical compound according to claim 70 wherein x is 4 and y is 3.

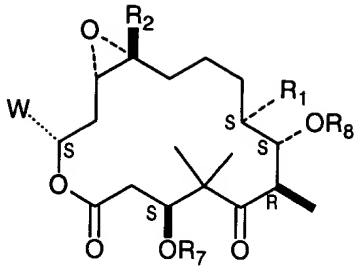
73. Cancelled.

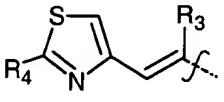
74. (New) A chemical compound according to claim 69 wherein W is



, R_2 is H or methyl, R_7 is H or COR_{11}, R_8 is H or COR_{12}, and wherein R_{11} and R_{12} are each selected from $-(CH_2)_4CH_3$ and-$(CH_2)_3CH=CH_2$.

75. (New) A chemical compound having a formula



and stereoisomers thereof, wherein W is  ; wherein R_1, R_2, R_3 and R_4 are each selected from H, alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein R_7 is selected from H, a protecting group, and COR_{11}; wherein R_8 is selected from H, a protecting group, and COR_{12}, and wherein R_{11} and R_{12} are each selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

76. (New) A chemical compound according to claim 75 wherein at least one of R_{11} and R_{12} is selected from $-(CH_2)_xCH_3$ and $-(CH_2)_yCH=CH_2$, where x and y are integers.

77. (New) A chemical compound according to claim 76 wherein x and y are selected from the integers 3 and 4.

78. (New) A chemical compound according to claim 76 wherein x is 4 and y is 3.